

# UNITED STATES SIGNAL SERVICE

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### INTRODUCTION.

This REVIEW is based on reports for January, 1891, from 2,208 regular and voluntary observers. These reports are classified as follows: 170 reports from Signal Service stations; 118 reports from United States Army post surgeons; 1,441 monthly reports from state weather service and voluntary observers; 31 reports from Canadian stations; 186 reports through the Central Pacific Railway Company; 262 marine reports through the co-operation of the Hydrographic Office, Navy Department; marine reports through the "New York Herald Weather Ser-

vice;" monthly reports from the local weather services of Alabama, Arkansas, Colorado, Illinois, Indiana, Iowa Weather and Crop Service, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Meteorological Report of Missouri State Board of Agriculture, Nebraska, Nevada, New England, New Jersey, New York, North Carolina, North and South Dakota, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, and Wisconsin, and international simultaneous observations. Trustworthy newspaper extracts and special reports have also been used.

### CHARACTERISTICS OF THE WEATHER FOR JANUARY, 1891.

Over the northwest part of the country from the Red River of the North Valley to the north Pacific coast the month was the warmest January on record. The greatest departure above the average temperature for January occurred in Montana and North Dakota, where it was more than 20°, and the month was more than 10° warmer than usual from east Washington to the upper Mississippi valley and the west part of the upper lake region. The only sections in which the month was cooler than usual were the east Gulf states, the Florida Peninsula, the southern plateau, and the west part of the middle plateau. At Fort Grant, Ariz., and Montrose, Colo., six years record, the month was the coolest January on record. The highest temperature reported by a regular station of the Signal Service was 88°, at Rio Grande City, Tex., and by a voluntary observer, 90°, at Fort Ringgold, Tex. The lowest temperature reported by a regular station of the Signal Service was -27°, at Saint Vincent, Minn., and by a voluntary observer, -36°, at Breckenridge, Colo. The first killing frost of the season was reported at Yuma, Ariz., on the 7th, at San Antonio, Tex., on the 11th, and at Titusville, Fla., on the 14th. Light frost injured vegetation near San Diego, Cal., on the 8th, at Colegrove, Cal., on the 9th, at Corpus Christi, Tex., on the 11th, and at Jupiter, Fla., on the 14th.

The monthly precipitation was the heaviest ever reported by Signal Service stations for January in parts of Maine, Vermont, Connecticut, Massachusetts, New York, New Jersey, Pennsylvania, Texas, upper Michigan, Nebraska, and southeast Wyoming, and it was the least ever noted at Detroit, Mich., at stations in Montana, in east Washington, and at San Francisco, Cal. The precipitation was in excess of the average for January in the middle Atlantic and New England states, from the west Gulf states northeastward to Kentucky, and from the Mississippi River over the middle-eastern and southeast slopes of the Rocky Mountains, and the precipitation was deficient on the Pacific coast, over the west parts of the southern and middle plateau regions, and from the north Pacific coast to the Red River of the North Valley. On the middle-eastern and southeast slopes of the Rocky Mountains more than double the usual amount of precipitation fell. On the middle and south Pacific coasts and over the middle and northern plateau regions the monthly

precipitation was less than one-half of the January average. In the Ohio Valley and Tennessee, the upper Mississippi valley, the upper lake region, in the east Gulf states, and over the Florida Peninsula the precipitation averaged about the normal. In parts of Alabama, Mississippi, and Louisiana the excessive rainfall interrupted farm work and rendered the roads impassable. The greatest depth of snowfall was reported at Cumbres and Fort Lewis, Colo., and Alta, Utah, where it exceeded 50.0 inches; it exceeded 40 inches at Calais, Me., Summit Pa., and Marquette, Mich.; 30 inches at Strafford, Vt., in south-central Pennsylvania, at mountain stations in Colorado, and at Nogal, N. Mex.; and exceeded 20 inches generally in Maine and New Hampshire, in north and south Vermont, at stations in Massachusetts, west Connecticut, central and east New York, north-central Virginia, northeast Pennsylvania, upper and north lower Michigan, at Springvale, Kans., Embarrass, Wis., northeast New Mexico, west-central Idaho, and at Cisco, Cal. On the 1st a heavy snow storm prevailed in north Missouri and Kansas. On the 7th a snow storm prevailed over east Colorado, north New Mexico, Kansas, and west Nebraska, and by the 8th had extended over Missouri to Illinois. A snow storm prevailed in Indian Territory and west Texas on the 9th. A heavy snow storm was reported in Tennessee on the 24th. On the 24th and 25th great damage was caused to electric wires in the middle Atlantic and New England states by a heavy snow storm.

On the 7th a tornado occurred near Shiner and Yoakum, Tex., and on the 31st a tornado was reported at Palo Alto, Miss. A severe thunder-storm occurred at Little Rock, Ark., on the 1st; at Athol, Mass., on the 2d; and at Wellsborough, Pa., on the 29th. A severe general storm prevailed in Louisiana, Kansas, Nebraska, and Wisconsin on the 1st; over the middle and south New England states on the 11th; along the middle Atlantic and New England coasts on the 12th; along the New York and New England coasts on the 17th; along the Atlantic coast from North Carolina to Massachusetts on the 22d; and in the middle Atlantic and New England states, 25th.

On the 3d the Monongahela River was above the danger-line at Pittsburgh, Pa., and a part of Allegheny City was flooded. At Cincinnati the Ohio River rose until the 6th, flooding basements at points on the river front. Rain and